

ATMAM Mathematics Methods

Test 2 (2018)

Calculator Free

Name:

Teacher:

Friday

Smith

Time Allowed : 30 minutes

Marks	/36
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Materials allowed: Formula Sheet.

All necessary working and reasoning must be shown for full marks.

Marks may not be awarded for untidy or poorly arranged work.

1 Determine the following indefinite integrals.

a) $\int 12x^3 - 4x \, dx$ (1)

b) $\int x(x + 1)^2 \, dx$ (2)

c) $\int \frac{3x^4 - 2x^3 + 1}{x^2} \, dx$ (3)

d) $\int e^{3x-2} dx$ (2)

e) $\int 3(4 - 2x)^5 dx$ (2)

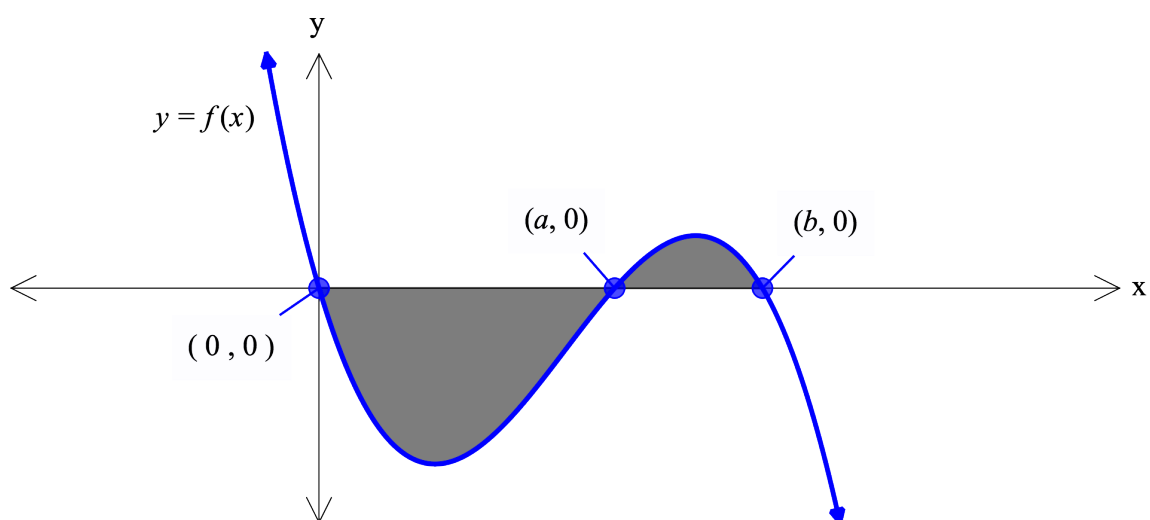
2 Evaluate the following definite integrals

a) $\int_1^4 3x^2 + 1 dx$ (2)

b) $\int_{-1}^2 \pi dx$ (2)

c) $\int_0^{\frac{\pi}{4}} \sin 2x \, dx$ (5)

3 Circle all of the expressions that would give the area shaded below. (4)



$$\int_0^b f(x) dx$$

$$\left| \int_0^b f(x) dx \right|$$

$$-\int_0^a f(x) dx + \int_a^b f(x) dx$$

$$\int_0^a f(x) dx - \int_a^b f(x) dx$$

$$\int_0^a f(x) dx + \int_a^b f(x) dx$$

$$\int_a^0 f(x) dx + \int_a^b f(x) dx$$

$$\left| \int_0^a f(x) dx \right| + \left| \int_a^b f(x) dx \right|$$

$$\int_0^b |f(x)| dx$$

- 4** If $f''(x) = 6x - 2$ and given that $f(2) = 9$ and $f(-1) = -6$, determine $f(x)$. (7)

- 5** Determine the area trapped between the curve $y = x^3 - 3x + 3$ and the line $y = x + 3$. (6)